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SOCIETIES AND ACADEMIES.

AMERICAN MATHEMATICAL SOCIETY.

A REGULAR meeting of the American Mathematical Society was held at Columbia University, New York City, on Saturday, October 28th. Thirty-one persons attended the two sessions, and twelve papers were presented. Immediately at the opening of the morning session a recess was taken to enable the members to hear the Presidential Address of Professor Rowland before the American Physical Society, which met in the same building. The simultaneous meeting of the two societies naturally resulted in a reinforcement of interest and activity, and it is hoped that this and other coöperative action may become the established order.

It has been arranged with a view to economy of time that hereafter the morning session of the meetings of the Society shall open at 11 o'clock, and the afternoon session at 2 o'clock. The Council will meet at 10:15 A. M.

The Editorial Board announced that the arrangements for publishing the *Transactions*, the newly created organ of the Society, were in a most favorable state of progress. The first number will appear January 1, 1900. The fact that two first-class journals are not only possible but actually required for the publication of the mathematical output of this country is a striking evidence of the growth of the science here in the last few years.

The following persons were elected to membership in the Society:

Professor M. E. Bogarte, Northern Indiana Normal School, Valparaiso, Ind.; Mr. A. S. Gale, Yale University; Mr. B. L. Groat, University of Minnesota; Dr. Edward Kasner, Columbia University; Professor J. A. Miller, University of Indiana; Professor A. M. Sawin, Clark University, Atlanta, Ga.; Professor S. A. Singer, Capital University, Columbus, Ohio; Dr. H. E. Slaught, University of Chicago; Professor E. P. Thompson, Miami University, Oxford, Ohio. Seven applications for membership were received.

The following papers were read:

(1) Professor PAUL GORDAN: 'Formentheoretische Entwickelung der in Herrn White's Abhandlung über Curven dritter Ordnung enthaltenen Sätze.'

(2) Professor E. O. LOVETT: 'The transformation of straight lines into spheres.'

(3) Dr. G. A. MILLER: 'On the simply transitive primitive groups.'

(4) Professor CHARLOTTE ANGAS SCOTT: 'The conditions imposed on a curve by assigned multiple points.'

(5) Professor E. H. MOORE: 'On the generational determination of abstract groups' (preliminary communication).

(6) Professor CHARLOTTE ANGAS SCOTT: 'The status of imaginaries in pure geometry.'

(7) Professor MAXIME BÔCHER: 'On Sturm's theorem of comparison' (preliminary communication).

(8) Professor F. MORLEY: 'On a fundamental geometric construction.'

(9) Mr. E. B. WILSON: 'The decomposition of the general collineation of space into three skew reflections.'

(10) Dr. G. A. MILLER: 'On the order of the product of two substitutions.'

(11) Mr. J. K. WHITTEMORE: 'On a generalization of the fundamental problem of the calculus of variation.'

(12) Mr. J. L. COOLIDGE: 'A projective representation of the imaginary points of a plane.'

The next meeting of the Society, which will be held on Thursday, December 28th, will be the annual meeting for the election of officers. The Chicago Section will meet at the University of Chicago on Thursday and Friday, December 28–9. At the annual meeting President Woodward will deliver a Presidential Address on 'The Century's Progress in Applied Mathematics.'

F. N. COLE,
Secretary.

TORREY BOTANICAL CLUB.

AT the meeting on October 10, 1899, nine new members were elected.

A series of nature-printed plant-plates was exhibited by Monsieur Alois Barta, temporarily at 521 East 82d Street, including algæ and phanerogams, all printed in natural colors. They excited great interest on account of their beauty and slight expense.

Dr. MacDougal referred to the success of the Sullivant Day at the Columbus meeting of the

American Association for the Advancement of Science this last August, one of the most interesting features of the meeting, and a tribute to the careful plans prepared for it by Mrs. E. G. Britton.

The remainder of the evening was devoted to reports from excursions and from summer observations by members.

Dr. Rusby, as guide to nine excursions in the spring, reported an average attendance of 31.

Menispermum rhizomes, as examined at Upper Mountain, N. J., April 8th, had begun no new growth and were still connected with the frost-killed stems, the point of change from rhizome to stem being purely an accidental result of exposure. The plant being essentially tropical, acts toward killing frost as if but imperfectly habituated to it.

Obolaria was well-developed this day, perhaps the earliest spring flower of its locality.

Professor Underwood reported on field work in July, and upon the Decoration Day excursion to Tullytown, Pa., about 20 persons from Philadelphia and 12 from New York present. *Isoetes riparis*, a tidal plant, occurred along tributary rivers.

Dr. Britton reported on the Fourth of July excursion to the Delaware River at Bull's Island, another *Isoetes*, *I. Dodgii*, occurring there.

Professor T. C. Porter reported the occurrence of *Equisetum littorale*, *Onosmodium Virgianum*, etc., at the Bull's Island locality.

Both of these excursions were contributory to Dr. Bretts' revision of Dr. Meyer's excellent catalogue of the Bucks county flora, soon to be issued. It is now being worked out with attention to details of distribution, ecology and modern taxonomic views. If we could have other counties here in the east worked up in a similar critical way, it would be a great aid to science.

Discussions regarding various Gentians followed.

Mr. Van Brunt reported seeing a single stem bearing 59 flowers of *Gentiana crinita*; all the upper, certainly 20, in full bloom. Putting the plants, after clipping, in the dark over night, and till 9 or 10 a. m., they expanded beautifully on exposure to the light.

Rev. L. T. Chamberlain reported 96 buds and blossoms on a single stem of *Gentiana crinita* in Massachusetts at West Brookfield. White blossoms came out in six weeks, the stem having bloomed in his study 42 days. Mr. Chamberlain also reported that Mr. Isaac Lea, of Philadelphia, had told him of finding a stem of *Gentiana crinita* with 150 blossoms.

Professor Porter called attention to white flowers of *G. Andrewsii;* it is this, he thinks, which was described as *G. alba.*

Mrs. Britton reported *G. quinqueflora* two or three feet high, and Professor Porter spoke of the habit of this plant to produce a great variety of size in the same soil, with little dwarfs with one flower at one inch high.

Professor Porter spoke of *G. flavida* as recently found in Bucks county.

Dr. Rusby referred to a successful experiment in scattering the seeds of the Fringed Gentians upon the snow, resulting in a profusion of young seedlings.

Mr. S. Henshaw paid a tribute to the beauty of the Alpine Gentians of the Old World.

EDWARD S. BURGESS,
Secretary

SCIENCE CLUB OF THE UNIVERSITY OF WISCONSIN.

THE Science Club of the University of Wisconsin held its first meeting of the year on October 24th, with Mr. Charles R. Van Hise, the newly elected President, in the chair.

The programme of the evening consisted of the following papers:

'Earth Movements in the Pomperang Valley,' Connecticut, by Wm. H. Hobbs; 'Some Recent Observations Upon the Change of Length of Iron Due to Magnetization, by L. W. Austin.

The first paper was a study of block faulting in the Newark Formation of the Pomperang Valley, an area of fifty square miles in western Connecticut. It was illustrated by a large number of lantern slides.

Mr. Austin gave the results of his recent work on the change of length of iron in an alternating magnetic field. He finds that when iron is magnetized by means of an alternating current, the expansion is less than with a direct current, and that this decrease becomes greater as the frequency becomes higher. There is a marked analogy between this phenomenon and the decrease in the magnetic permeability in an alternating magnetic field as the frequency is increased, a fact which has been recently established by Niethammer and M. Wien.

WM. H. HOBBS.

DISCUSSION AND CORRESPONDENCE.

GEOLOGICAL TIME.

EDITOR OF SCIENCE: Sir Archibald Geikie's recent forcible plea to working geologists for the more careful accumulation of data which may yield reliable estimates of geological time, makes the interesting suggestion given in SCIENCE, October 27th, by Professor Wilbur C. Knight, under the title of 'Some New Data for Converting Geological Time Into Years,' seem very timely. The opportunities for making such calculations of the rate of retreat of cliffs under the action of subærial decay, by employing slow-growing trees on the escarpments as a chronometer, are far wider spread than at first thought might seem likely.

In justice to the maiden work of a now eminent American geologist, it is proper to recall the fact that the first suggestion of this method and its first practical application were made by Dr. G. K. Gilbert, in 1866, when temporarily connected with the staff of the New York State Museum. After the excavation of the mastodon skeleton now standing in the State Museum, from a glacial pot hole in the valley of the Mohawk river at Cohoes, N. Y., Mr. Gilbert gave attention to an estimate of the rate of retreat of the cliffs of the river gorge, basing his observations on the degree to which the roots of the red cedars on the banks had been exposed by the falling away of the rock face. Mr. Gilbert's observations and deductions were published in the 21st annual report on the New York State Cabinet of Natural History (1871), and I quote from them the following paragraph: "Climbing from below or lowered by a rope from above, I have examined nearly all these trees and measured in each case the circumference of trunk and length of exposed root. I have also counted the rings of annual accretion of several sections to ascertain the relation of size to age. From these data an idea may be obtained of the rate of recession of the cliff. The growth is exceedingly slow. A branch of one and one-eighth inch in diameter showed 100 rings of growth, and an average of six such branches gave 72 years per inch of diameter. The figures used below were obtained from two sections of trunks. One of these measures 19½ inches in circumference and exhibits 310 rings; the other gave 11 inches and 270 rings. In these an inch of circumference represents 19.1 years, and an inch of diameter, 60 years."

He then gives a tabulation of results derived from 19 of these ancient gnarled cedars and by dividing the average measured length of exposed root by the average estimated age of the tree, arrives at the figure 15.2 inches as the rate of retreat of the rock face per century. This figure for other considerations he reduced to 12 inches per century and upon this calculation bases his final statement: "This gives as the time necessary to have removed the banks below the fall [Cohoes] from the deep channel to their present position, 35,000 years, which period I consider a minimum for the time that has elapsed since Cohoes falls were opposite the mastodon pot hole."

Twenty years ago the writer applied the same method to a calculation of the rate of retreat of the shale escarpments along Canandaigua Lake, N. Y., where these ancient cedars were at that time abundant, and had the satisfaction of arriving at a conclusion very like that obtained by Mr. Gilbert. Just where the weakness in such calculations may lie is not at once evident unless there be one in admitting the *annual* value of the growth rings in the tree. Mr. Gilbert's method, now revived by Professor Knight, merits renewed and general application. Employed with caution and care to exclude diverse agencies of retreat, it ought to afford eventually, important conclusions.

JOHN M. CLARKE.

ALBANY, N. Y.

NEWSPAPER SCIENCE.

TO THE EDITOR OF SCIENCE: So much has been published far and wide this last summer about my intention 'to scientifically demon-